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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/578,290	05/25/2000	James E Carey	1958.2001-000	5934

			EXAMINER
21005 7590 07/12/2004			VO, LILIAN

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ART UNIT	PAPER NUMBER
2127	

DATE MAILED: 07/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on _12 May 2004_.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1 - 38_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1 - 38_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on _5/25/00_ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   **Claims 1 – 38** are pending.

Claim Objections

2.   **Claims 6 and 24** are objected to because of the following informalities: a period (.) is

missing at the end of each claim (page 3, line 8 and page 6, line 13, respectively). Appropriate

correction is required.

Drawings

3:      The drawings are objected to because the numbers and reference characters are not plain

and legible. See the attached Form PTO-948 by the Draftperson for more details. Corrected

drawing sheets are required in reply to the Office action to avoid abandonment of the application.

Any amended replacement drawing sheet should include all of the figures appearing on the

immediate prior version of the sheet, even if only one figure is being amended. The figure or

figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where

necessary, the remaining figures must be renumbered and appropriate changes made to the brief

description of the several views of the drawings for consistency. Additional replacement sheets

may be necessary to show the renumbering of the remaining figures. The replacement sheet(s)

should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to

obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office

action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the
> subject matter which the applicant regards as his invention.

5.   Claims 3, 4, 12, 13, 21, 22, 30, 31 and 35 - 37 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject

matter which applicant regards as the invention.

6.   **Claims 3, 12, 21, 30 and 35** recite the limitation "the selected task queue" in pages 2, 3,

5, and 7, line 2, respectively. There is insufficient antecedent basis for this limitation in the

claim.

7.   **Claims 4, 13, 22, 31 and 36** recite the limitation "the associated task queue" in pages 2,

4, 5 and 7, line 2, respectively. There is insufficient antecedent basis for this limitation in the

claim.

8.   **Claim 37** recites the limitations "the associated task queue" and "the associated worker

thread", in page 8, lines 6 - 7. There is insufficient antecedent basis for this limitation in the

claim.

Claim Rejections - 35 USC § 103

9.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

10.   Claims 1, 4, 5, 6, 7, 10, 13 - 16, 19, 22 - 25, 28, 31 - 33 and 36 are rejected under 35

U.S.C. 103(a) as being unpatentable over Maresco (US 6,418,458) in view of Sullivan (US Pat.

5,438,680).

11.   Regarding **claim 1**, Maresco discloses in a multithreaded computing environment, a

method of processing computing tasks (abstract, col. 1, lines 15 - 21), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract,

col. 1, lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 - 38);

defining a plurality of task queues (abstract), each task queue capable of queuing a

plurality of tasks (abstract, col. 6, lines 12 - 13);

associating each task queue with a respective worker thread (col. 3, lines 49 – 60, col. 5,

lines 26 – 47, col. 6, lines 13 – 17, fig. 4).

Maresco discloses of placing tasks in task queue (col. 3, lines 52 – 57) but did not clearly

teach the process of assigning a task to a task queue in an essentially random fashion. This

feature can be found in Sullivan in which tasks are simply assigned to processors in a generally

random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art, at the

time the invention was made to incorporate this feature to Maresco to optimize the system

performance with task assignment.

12.   Regarding **claim 4**, Maresco discloses the method of claim 1 further comprising, from a

work thread, processing a task from the associated task queue (abstract, col. 2, lines 27 – 30, col.

3, lines 37 – 38, col. 6, lines 12 - 17).

13.   Regarding **claim 5**, Maresco discloses the method of claim 1 further comprising, from a

work thread, processing a task from a task queue not associated with the thread (col. 3, lines 20 –

22, 37 – 60, col. 5, lines 26 - 30).

14.   **Claims 6, 7, 10, 13 - 16, 19, 22 - 25, 28, 31 - 33 and 36** are rejected on the same ground

as stated above.

15.   Claims 2, 3, 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35 are rejected under 35

U.S.C. 103(a) as being unpatentable over Maresco (US 6,418,458) in view of Sullivan (US Pat.

5,438,680) as applied to claims 1, 6, 10, 15, 19, 24, 28 and 33 above, and further in view of

Najork et al. (US Pat. 6,377,984, hereinafter Najork).

16.   Regarding **claims 2 and 3**, Maresco and Sullivan did not clearly specify the steps of

assigning a task comprising selecting an empty task queue and determining whether the selected

task queue is in a busy state. Nevertheless, these teaching steps are disclosed in Najork's

invention (col. 3, lines 22 – 33).

It would have been obvious for one of ordinary skill in the art, at the time the invention

was made include Najork's teaching with Maresco and Sullivan to better load balancing the tasks

by utilizing all of the empty queues while not overloading other busy queues in the system.

17.   **Claims 8, 9, 11, 12, 17, 18, 20, 21, 26, 27, 29, 30, 34 and 35** are rejected on the same

ground as stated above.

18.   Claims 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Maresco (US 6,418,458) in view of Sullivan (US Pat. 5,438,680) and further in view of Brenner

et al. (US Pat. Application Publication 2003/0225815, hereinafter Brenner).

19.   Regarding **claim 37**, Maresco discloses in a multithreaded computing environment, a

method of processing computing tasks (abstract, col. 1, lines 15 - 21), comprising:

defining a plurality of worker threads, each thread capable of processing a task (abstract,

col. 1, lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 - 38);

defining a plurality of task queues (abstract), each task queue capable of queuing a

plurality of tasks (abstract, col. 6, lines 12 - 13);

associating each task queue with a respective worker thread (col. 3, lines 49 – 60, col. 5,

lines 26 – 47, col. 6, lines 13 – 17, fig. 4);

from a worker thread, processing a task from the associated task queue (abstract, col. 1,

lines 45 – 57, col. 2, lines 27 – 30, col. 3, lines 37 – 38, col. 6, lines 12 – 13).

Maresco discloses of placing tasks in task queue (col. 3, lines 52 – 57) but did not clearly

teach the additional limitations such as the process of:

assigning a task to a task queue in an essentially random fashion using a random number

generator to identify a task queue; and

searching for an empty task queue to store the task if it is determined that the initial task

queue is not empty.

Sullivan teaches the concept in which tasks are simply assigned to processors queue in a

generally random fashion (col. 6, lines 35 – 61). It is obvious for one of ordinary skill in the art,

at the time the invention was made to recognize Sullivan's system inherently use a random

generator to randomly select which processor queue for assigning the tasks.

Brenner teaches the concept of placing new thread/process in a run queue associated with

an idle processor (page 3, paragraph 0043).

It is therefore obvious to incorporate Sullivan's teaching to Maresco to optimize system

performance with task assignment in a random fashion (Sullivan: col. 6, lines 55 – 61). It is also

obvious for one of an ordinary skill in the art, at the time the invention was made to apply

Brenner's concept in assigning processes to an empty run queue to Maresco's system so that

optimal performance can be achieved with balancing processes among the system run queues.

20.   **Claim 38** is rejected on the same ground as stated above.

Response to Arguments

21.   Applicant's arguments with respect to claims 1, 6, 10, 15, 19, 24, 28 and 33 have been

considered but are moot in view of the new ground(s) of rejection.
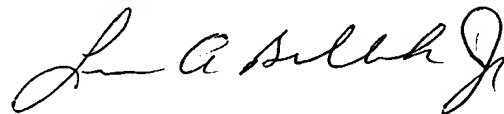

Conclusion

22.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure. Cornaby, US 5,355,486: discloses of assigning task to and empty task queue.

23.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Lilian Vo whose telephone number is 703-305-7864. The

examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Meng-Ai An can be reached on 703-305-9678. The fax phone number for the

organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

lv
June 21, 2004